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REPORT OF AN OPERATION FOR REMOVAL OF
THE GASSERIAN GANGLION.

BY

EMORY LANPHEAR, M. D., PH. D.

KANSAS CITY, MO.

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OPERATION FOR REMOVAL OF THE GASSERIAN GANGLION.

BY EMORY LANPHEAR, M. D., PH. D.,

KANSAS CITY, MO.

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Neuralgia of the trigeminus sometimes resists all medication and becomes so severe as to make life a burden; no source of peripheral irritation can be detected; surgical interference becomes imperative. Extirpation of Meckel's ganglion can never prove satisfactory; and as removal of the Gasserian ganglion will certainly cure intractable trigeminal tic, its practice is justifiable.

There are three methods of reaching the Gasserian ganglion: First, the intra-cranial; second, by ablation of the superior maxilla and trephining the base of the skull; third, by opening the base of the skull through the pterygoid region.

Mr. Horsley has done the first operation by opening the middle fossa through the temporal region, incising the dura and lifting up the temporo-sphenoidal lobe, so that the base of the skull can be seen by means of an electric illuminator; he then cuts the root of the nerve as it emerges from the pons and following it through the dura mater (which here divides into two layers to cover in the ganglion) removes the ganglion from above. This, it seems to me, is an operation of great difficulty as well as severity, and besides the not inconsiderable compression of the brain necessary to expose the point of attack, must, in hands less skilled than Mr. Horsley's, result in more or less injury; and haemorrhage, of alarming degree, is likely to occur either from the contiguous sinus or the artery. Mr. Horsley's only case died seven hours after operation, presumably from shock.

The second method has been followed by Mr. Rose, in one case; the right superior maxilla was excised in the usual manner and the foramen ovale easily exposed; a disk of bone was removed and the ganglion extirpated; the operation was followed by a violent panophthalmitis, which necessitated enucleation of the eye; otherwise the operation was eminently successful.

The third mode is, I believe, the one to be preferred and will be followed in the case now being chloroformed. Mr. Rose has performed this operation four times (see *British Medical Journal*, Feb. 6, 1892) successfully, and Prof. Andrews, of Chicago, twice. In doing it one must be careful in two things: First, the ganglion lying just above and external to the internal carotid artery, by a slip of the instrument, fatal haemorrhage may be incurred; Dr. Griffith will therefore stand ready to tie the common carotid in this patient, if necessary, while Dr. Binie will assist me; second, since division of the fifth nerve through the ganglion, or of its branches in front, gives rise to destruction of the parts supplied by it, and subsequent death (see *Flint's Human Physiology*, subject, "The Trigeminus") the ganglion must either be totally extirpated or the nerve divided behind the ganglion.

The patient before you, James S., of Chanute, Kansas, presented himself about two weeks ago for surgical treatment of incurable facial neuralgia. He is fifty-four years of age, of good family history, of previous good health, non-syphilitic, and of strong constitution. For eighteen years he has suffered from trigeminal neuralgia, affecting the right side of the face. It has been progressive and for the past year has been so bad as to necessitate his remaining in bed; you see him pale and emaciated, and lines of pain upon his face. For the past five years he has tried all the new coal-tar derivatives and the anodynes have been exhausted in vain search for a remedy; morphine has no effect; his teeth have been extracted, but with no benefit. He has consulted rhinologists, neurologists, ophthalmologists, etc., without avail. When he was admitted to the hospital I prescribed:

R Quininæ hydrobromat	ʒi
Ferri sulphat exsic.....	ʒss
Hyoscyaminæ sulphat.....	gr. 10

Misce et ft. pil. no. xij. Sig.: One every four hours.

This I did because Verneuil has said that no surgeon is justified in operating for any neuralgia, until he has tried hyoscyamine. It did no good in this case.

The head and face having been carefully shaved, the parts are thoroughly scrubbed with soap and water, dried, washed with ether, dried, and washed with bichloride solution, $\frac{1}{1000}$. The eye upon the affected side is irrigated with a weaker solution, and the lids stitched together with fine catgut; the ear is cleaned and packed with gauze; and the field of operation surrounded by bichloride towels. Commencing just below the outer angular process of the frontal bone, an incision is made along the upper border of the zygoma to its posterior extremity, and curving sharply downwards, descends just in front of the ear and over the parotid to the angle of the jaw, thence along the horizontal ramus to the vicinity of the facial vessels. This flap of skin is dissected up, care being taken not to injure the parotid, Steno's duct and the facial nerve. By making this incision, as Mr. Rose claims, there is gained a maximum of space with a minimum of disfigurement and no paralysis of the portio dura. A long silk ligature is passed through the flap and held by an assistant, the retracted flap being protected by wrapping in bichloride gauze.

The periosteum is now stripped from the zygoma, and four holes drilled through the bone—two through the zygomatic process of the malar and two close to the root of the zygoma. These are about one-third of an inch apart and are to provide passage for silver wires to hold the parts in apposition after trephining. With a Hey's saw the zygoma is divided between these holes, the anterior saw-cut being directed obliquely downward and forward, and the posterior back as far as possible. The bone is turned down with the masseter muscle attached, care being taken not to injure the muscular attachment on the under surface through which future nutrition must come. The coronoid process of the inferior maxilla being thus exposed, the blade of a Liston bone-forceps is passed beneath it, and the bone cut through; no attempt will be made to restore the bone to its position, as the atrophy and cicatrical contraction might interfere with movements of mastication. The temporal muscle is turned up out of the way, exposing the pterygoids.

The external pterygoid muscle is separated from the skull by the periosteal elevator and drawn downward. Search is made for the nerve that it may be followed to the foramen ovale through which it makes its

exit. This cannot be found, so dependence must be placed upon the bony landmarks. The base of a clean skull, in the hands of Dr. Thrush, is carefully observed and corresponding points located upon the patient. Having determined the probable location of the foramen ovale, a half-inch trephine is introduced, the center pin being driven in a little behind and external to the foramen. At the first stroke of the saw a gush of bright arterial blood appears; examination shows that the trephine has cut into the foramen spinosum as well as the ovale, and wounded the middle meningeal artery; with great difficulty this is secured and the trephining resumed. A disc of bone is removed and the dura cut with scissors. Nerve tissue is seen, but whether it be the ganglion or not, cannot be positively determined because of the haemorrhage; however, it is seized with dissecting forceps and torn away, a curette introduced to thoroughly clean out the nerve-tissue and an attempt made to rapidly check bleeding, as the patient is beginning to show signs of shock. Haemorrhage having been arrested, the wound is irrigated with bichloride solution, the fragment of the coronoid process cut off with scissors, the temporal muscle tucked into the fossa, and the zygoma replaced and wired. As no drainage can be employed the incision is rapidly closed with a continuous catgut suture, the face washed, iodoform dusted on very freely and a firm compress of bichloride gauze applied. The usual dressings are used.

Both eyes will be kept bandaged for four days and the one on the affected side for some weeks. If we have been successful in carrying out our design, we shall secure healing by primary union, so far as the external wound is concerned. And as for immunity from the terrible paroxysmal pain, we may expect the most gratifying results, if we may judge from the relief secured in the seven cases thus far operated on.

In reply to the question: "What effect will this have upon mastication?" I would say that the patient must necessarily do his chewing, henceforth, upon the opposite side, but as he has already done this for more than ten years, it can inconvenience him but little.

In conclusion, after a careful study of the operation, I must say I believe Mr. Rose to be correct in his assertion, that in all cases of epileptiform neuralgia of the trigeminus, where treatment has proven unavailing, extirpation of the Gasserian ganglion through the base of the skull is a somewhat difficult but not dangerous method of cure.

NOTE.—This patient made an ideal recovery. Shock was easily overcome. The temperature rose to $100\frac{1}{2}$ ° F. on the day following the operation—pure surgical fever—but rapidly declined. Freedom from pain was absolute. The appetite speedily improved and there was a gain of about ten pounds in weight during the two weeks that he remained in hospital. There developed a suppurative conjunctivitis upon the affected side, and it was feared that the eye might be lost. Treatment by irrigation with mild bichloride solution subdued it in about five days, and no further trouble was experienced. It is possible that it was the result of the introduction of the stitches into the lid, the conjunctival sac having been imperfectly cleaned. The patient was allowed to return to his home, 150 miles distant, on the thirteenth day after operation. He is now, for the first time in years, perfectly free from pain, and well.